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ABSTRACT

Reported in this document are the results of a longitudinal study tracing the achievement of nearly 400 students enrolled in the Early Childhood Education Center (ECEC) program for prekindergarten and kindergarten children (from 1976-77 through 1978-79). Progress of these students and their contemporaries was measured by the Portland Public Schools' Achievement Levels Tests, which were administered in the fall and spring at the third-, fourth-, and fifth-grade levels. Analysis of achievement results was presented by grade level for three categorical groupings: total survey group, student status (transfer or resident), and sex of student. Findings and conclusions were suggested, based on a comparison of standardized deviations and gains of the surveyed group and those of the total Portland Public School District. Generally, it was found that the gain made by ECEC students was close to the district average in reading and mathematics and slightly above the district average in language usage. (Author/RH)

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Preliminary Report on the ECEC Longitudinal Study

April 1984

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Abstract

This document reports results of a longitudinal study that follows the achievement of nearly 400 students enrolled in the Early Childhood Education Center program for both pre-kindergarten and kindergarten (during 1976-77 through 1978-79). Progress of students is measured by the Portland Public Schools' Achievement Levels Tests administered in the fall and spring at the 3rd, 4th, and 5th grade levels. The analysis of achievement results is presented by grade level for three categorical groupings: (a) total group; (b) student status (administrative transfer and resident); and (c) by sex. Findings and conclusions based on a comparison of standardized deviations and gains (in relation to the total Portland Public School District) are stated.

Preliminary Report on ECEC Longitudinal Study

Introduction

It has been 10 years since the first Early Childhood Education Centers were established by the Portland Public School District. At the beginning of the 1974-75 school year, three elementary schools were converted to primary schools offering pre-kindergarten and all-day kindergarten programs to a limited number of neighborhood students and an equal number of out-of neighborhood transfer students. The rennovation and conversion of elementary schools in inner northeast Portland to primary schools were part of a master plan designed to promote desegregation of a number of predominantly Black schools and institute middle schools in the Portland District.

Much has happened in the last 10 years. The response of White parents to the Early Childhood Education Centers has not been what District staff expected, especially at the uppergrades. (Attendance of White students beyond the first few years at the ECECs drops off dramatically.) Black families have made it clear that they do not approve of one-way busing out of their neighborhoods. It is reasonable that District staff and parents should ask: "Does the pre-kindergarten and kindergarten experience in Portland's ECECs result in students making greater achievement gains than those students who have not had the experience?"

While questions regarding the effect of early childhood education have been around for sometime, the ability to conduct a longitudinal study within the framework of existing departments and resources has only recently been available. Several events have significantly impacted the ability of the Portland District to conduct a longitudinal study:

(1) the organization of the data base in Data Processing so that individual student information including student identification number, sex, ethnic data, birth date, transfer data, etc. can be requested and accurately obtained within a reasonable amount of time;

(2) the creation of a test data base in the Evaluation Department that contains student information including student identification number, grade, school number, and fall and spring test scores in reading, mathematics and language usage;

(3) access to SPSS (Statistical Package for Social Scientists) and standardized programs (developed by Evaluation Department staff) that allow the researcher or evaluator to put in student achievement scores and obtain with minimum effort group deviations and gains.

Rationale for Preliminary Study

The Board of Education for the Portland District has expressed an interest in the Early Childhood Education Centers and the effect of the pre-kindergarten and kindergarten program on student achievement. There are a number of reasons that a preliminary study should preceed a more comprehensive study:

(1) Only in recent years has the Portland District had the kind of data base that would facilitate a longitudinal study. It is not immediately clear whether the data needed for a comprehensive study is available.

(2) Resources might be better spent by looking at the ECEC programs since 1980-81 because it was at that time an attempt was made to promote the standardization of programs and recordkeeping.

(3) A preliminary study can assist District staff in immediately identifying issues, concerns and formulating questions to be answered by a more comprehensive study.

Description of Study

Purpose: to determine the achievement of students who attended both pre-kindergarten and kindergarten at an ECEC in relation to the District average.

Levels Tests Used to Measure Achievement . . . .

ECECs do not use the same measures or tests to determine student progress for pre-kindergarten through second grades; therefore, the the first common measure that can be used to evaluate student progress or achievement occurs at the third-grade level with the Portland Achievement Levels tests. It is the third, fourth and fifth grade achievement scores that are used to compare the progress of ECEC students to the District average.

Details of the Analysis . . . .

Of the 345 pre-kindergarteners enrolled in 1976-77 and the 438 enrolled in 1977-78, 376 students meet the criteria defined for the study:

(1) Students attended pre-kindergarten and kindergarten at an Early Childhood Education Center;

(2) Students were tested pre and post (clear) and were tested in the same school (intact).

(3) Valid test scores were on the Evaluation data base.

First, grade level means in reading, mathematics and language usage were determined for the ECEC students included in the study. Next SPSS in conjunction with computer programs developed by the evaluation department were used to calculate:

(1) **Deviations** - standardized differences from District clear and intact grade level means.

(2) **Gains** - changes (in standing) as measured by standardized differences from District clear and intact grade level means for two different time periods (i.e., Fall to Fall or Fall to Spring.)

Standardized gains and Fall and Spring deviations were summarized three ways: (1) total group; (2) transfer status; and (3) by sex. The gains and deviations reported in this study reflect the difference between the performance of these subgroupings and the total district.

Limitations and Concerns Regarding Preliminary Study . . . .

This study follows the progress of the pre-kindergarten students for 1976-77 and 1977-78 from third through fifth grade. Conclusions are based on third, fourth and fifth grade achievement scores in reading, mathematic, and language usage. The evaluator recognizes the following limitations:

(1) Pre-kindergarten and kindergarten programs teach many socialization and readiness skills and often do not teach reading and mathematics. It cannot be automatically assumed that students will have higher mathematics and reading scores because of a preschool experience.

(2) With no standard measures applied during the pre-kindergarten and kindergarten experience, much of the information or data directly related to the early entry program may be lost or impacted by the first, second and third grade experiences.

(3) One cannot assume that the majority of the students who did not attend the Early Childhood Education Center program did not have a preschool experiences equal to or better than the experience offered at the ECECs.

(4) Aggregated data for Early Childhood Education Centers as a group covers the differences that may exist between individual ECEC programs.

RESULTS

Progress of the student population in this study will be determined by third, fourth and fifth grade achievement scores in reading, mathematics and language usage for the years 1980-81, 1981-82, and 1982-83. Results will be reported for the total ECEC population in the study; resident and transfer groups; and by sex. Fall deviations (where the group started compared to the total school district), Spring deviations (where the group ended compared to the total district), and gains (the gain of the group compared to the gain of the total district) will be presented.

Fall Deviations for ECEC Students

1. Generally, it can be stated that students who attended ECEC in pre-kindergarten and kindergarten as a total group have Fall scores slightly higher than the District average in all subject.

2. Resident ECEC students as a subpopulation consistently score lower than the District:

   -0.70 to -1.00 in reading
   -0.30 to -1.04 in mathematics
   -0.54 to -1.36 in language usage

   and far below transfer students who score above the District average in all years and all subjects:

   +0.93 to +1.71 in reading
   +1.16 to +1.69 in mathematics
   +0.95 to +1.52 in language usage.

3. Female students consistently score above the District average in all subjects:

   +0.59 to +1.09 in reading
   +0.57 to +1.10 in mathematics
   +0.70 to +0.79 in language usage.

4. Male students score within one-half of a deviation of the District average in all subjects for all years:

   -0.11 to -0.27 in reading
   +0.08 to +0.30 in mathematics
   -0.11 to -0.47 in language usage.

Table 1

FALL Deviations for ECEC Students
in
READING, MATHEMATICS & LANGUAGE USAGE

READING			MATHEMATICS			LANGUAGE USAGE			GROUP
1980	1981	1982	1980	1981	1982	1980	1981	1982	
+0.37	+0.27	+0.12	+0.37	+0.48	+0.31	+0.49	+0.33	+0.54	TOTAL
N=129	N=288	N=305	N=130	N=279	N=278	N=130	N=284	N=307	
-1.00	-0.72	-0.70	-1.04	-0.30	-0.70	-1.36	-0.54	-0.84	Res.
N=63	N=140	N=153	N=63	N=130	N=135	N=65	N=133	N=154	
+1.71	+1.20	+0.94	+1.69	+1.16	+1.26	+1.52	+1.16	+0.95	Trans.
N=66	N=148	N=152	N=67	N=149	N=143	N=65	N=146	N=153	
-0.11	-0.13	-0.27	-0.12	+0.30	+0.08	-0.44	-0.11	-0.47	Male
N=75	N=150	N=167	N=78	N=141	N=147	N=77	N=145	N=169	
+1.09	+0.70	+0.59	+1.10	+0.66	+0.57	+0.75	+0.79	+0.70	Female
N=54	N=138	N=138	N=52	N=138	N=131	N=53	N=139	N=138	

Spring Deviations for ECEC Students

1. Generally, it can be stated that ECEC students end the year with Spring scores slightly higher than the District average:

   +0.19 to +0.40 in reading
   +0.13 to +0.49 in mathematics
   +0.05 to +0.38 in language usage.

2. Resident students consistently have Spring scores that are below the District average:

   -0.69 to -1.06 in reading
   -0.29 to -1.40 in mathematics
   -0.38 to -1.36 in language usage

   and far below the average of transfer students:

   +0.94 to +1.60 in reading
   +1.05 to +1.69 in mathematics
   +0.89 to +1.60 in language usage

3. Male students from year to year have scores in reading and language usage that are slightly below the District average:

   -0.03 to -0.40 in reading
   -0.11 to -0.45 in language usage

   and scores that are slightly higher

   -0.18 to +0.28 in mathematics.

4. Female students have Spring scores in all subjects for all years that are consistently above District averages:

   +0.57 to +0.76 in reading
   +0.41 to +0.71 in mathematics
   +0.67 to +0.88 in language usage.

Table 2

SPRING Deviations for ECEC Students
in
READING, MATHEMATICS & LANGUAGE USAGE

READING			MATHEMATICS			LANGUAGE USAGE			GROUP
1981	1982	1983	1981	1982	1983	1981	1982	1983	
+0.30	+0.19	+0.40	+0.17	+0.49	+0.13	+0.21	+0.38	+0.05	TOTAL
N=129	N=288	N=305	N=128	N=279	N=302	N=13	N=284	N=307	
-1.06	-0.69	-0.86	-1.40	-0.29	-0.80	-1.36	-0.38	-0.78	Res.
N=63	N=140	N=153	N=63	N=130	N=135	N=65	N=138	N=154	
+1.60	+1.01	+0.94	+1.69	+1.17	+1.05	+1.60	+1.10	+0.89	Trans.
N=66	N=148	N=152	N=65	N=149	N=152	N=65	N=146	N=153	
-0.03	-0.20	-0.40	-0.18	+0.28	-0.10	-0.40	-0.11	-0.45	Male
N=75	N=150	N=167	N=76	N=141	N=165	N=77	N=145	N=169	
+0.76	+0.61	+0.57	+0.67	+0.71	+0.41	+0.88	+0.89	+0.67	Female
N=54	N=138	N=138	N=52	N=138	N=147	N=53	N=139	N=138	

Standardized Gains for ECEC Students

1. Generally, it can be stated that the gain made by ECEC students is close to the District average in reading and mathematics and slightly above the District average in language usage.

2. Resident students show the greatest gains of all ECEC sub-populations in language usage and have shown gains within .5 deviation of the District average in reading and mathematics for the last two years.

3. Transfer students have made gains within -0.55 to +0.02 of the District average in all subjects for the last three years.

4. Male students have made gains in language usage greater than the District average in 1981-82 and 1982-83 and close to the District average in reading and mathematics for all years.

5. Female students have improved gains from year to year in all subjects and show gains slightly below the District average for 1982-83.

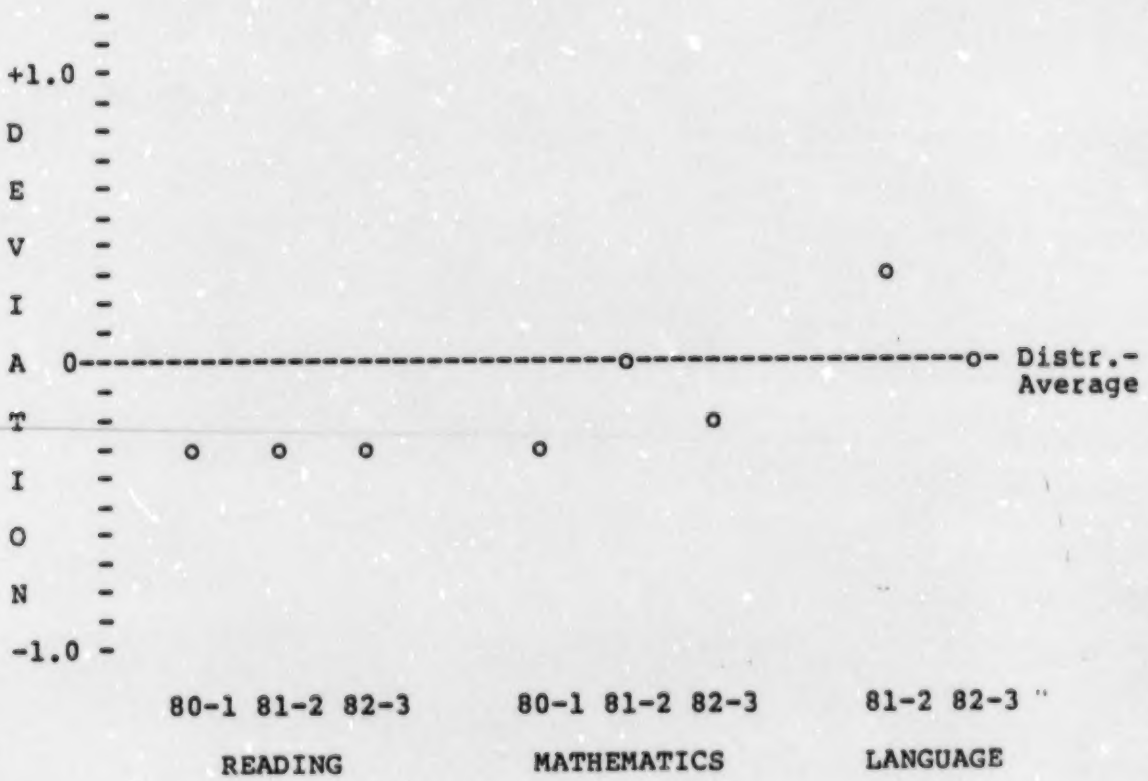
Table 3

Standardized Gains for ECEC Students
in
READING, MATHEMATICS & LANGUAGE USAGE

READING			MATHEMATICS			LANGUAGE		GROUP
80-81	81-82	82-83	80-81	81-82	82-83	81-82	82-83	
-0.26	-0.25	-0.26	-0.34	-0.03	-0.15	+0.32	+0.04	TOTAL
N=129	N=258	N=305	N=130	N=279	N=302	N=131	N=307	
-0.19	+0.07	-0.50	-0.73	+0.01	-0.02	+0.97	+0.20	Res.
N=63	N=140	N=153	N=63	N=130	N=150	N=61	N=154	
-0.33	-0.55	-0.02	+0.02	-0.36	-0.28	-0.25	-0.13	Trans.
N=66	N=148	N=152	N=67	N=149	N=152	N=70	N=153	
+0.29	-0.19	-0.38	+0.01	+0.00	-0.25	+0.76	+0.10	Male
N=75	N=150	N=167	N=78	N=141	N=165	N=76	N=169	
-1.04	-0.30	-0.11	-0.87	-0.03	-0.03	-0.29	-0.04	Female
N=54	N=138	N=138	N=52	N=138	N=137	N=55	N=138	

Figure 1

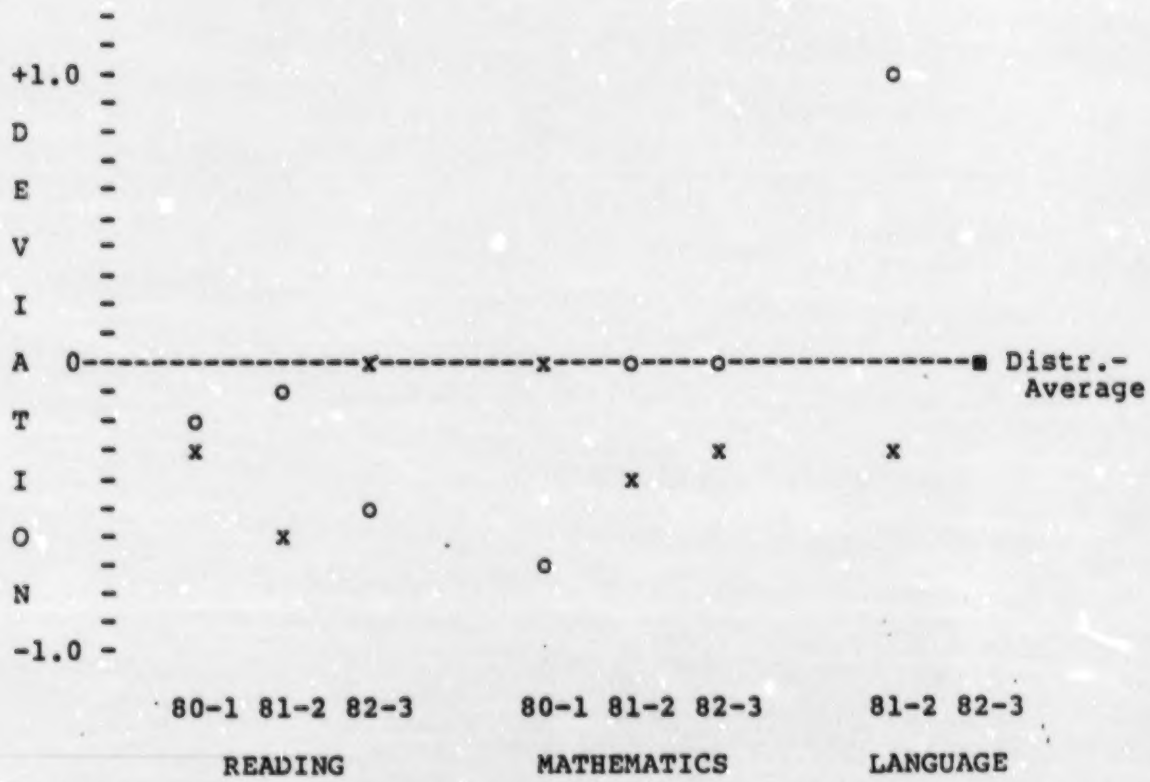
Standardized Gain for ECEC Students
(Included in Study)



o = ECEC Gain in relation to District by Year and Subject

Figure 2

Standardized Gain for ECEC Students
* Resident and Transfer



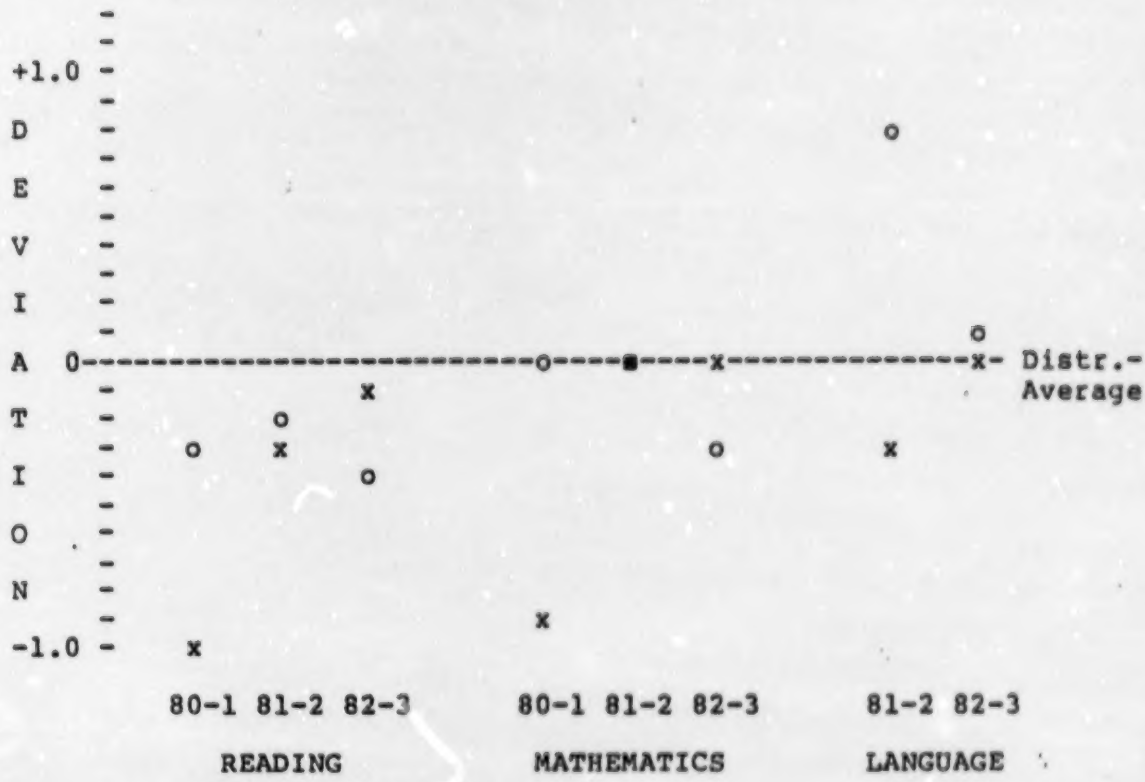
* Resident = Students residing within the attendance area of the ECECs

Transfer = Students residing outside the attendance area of the ECECs

o = Resident Student Gain in Relation to District
x = Transfer Student Gain in Relation to District

Figure 3

Standardized Gain for ECEC Students
by SEX



o = Male Students
x = Female Students

Conclusions

The review of deviations and gains reveals that as a total group the students who attended ECECs in pre-kindergarten and kindergarten are holding their own and as a group have Fall and Spring means above the District average. Gains made by the total group and subgroups--resident, transfer, and by sex are for the most part **average** with the following exceptions:

Subject	Year	Group	Gain	Performance Descriptor
Reading	1980-81	Females	-1.04	LOW
Reading	1981-82	Transfer	-0.55	LOW AVERAGE
Math	1980-81	Resident	-0.73	LOW AVERAGE
Math	1980-81	Females	-0.87	LOW AVERAGE
Language	1981-82	Resident	+0.97	HIGH AVERAGE
Language	1981-82	Males	+0.76	HIGH AVERAGE

The gains shown by resident and male students in language usage warrant further investigation. Disaggregation of the data by transfer code and sex may further delineate the effect of the ECEC pre-kindergarten and kindergarten experience on resident and male students.

Summary

While no outstanding or unexpected information has been provided by this preliminary ECEC study, the effort, energy and resources expended were worthwhile because:

(1) Results of the preliminary study provide information about the progress of students who attended ECECs during pre-kindergarten and kindergarten compared to the District average.

(2) The summary of gains and deviations provide data which will allow District staff to formulate questions to be be answered by a more comprehensive ECEC study.

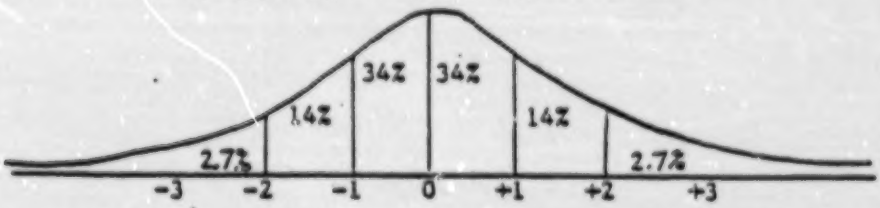
(3) The process followed has put into place the mechanism necessary to conduct ongoing yearly analyses as well as a more indepth longitudinal study.

GLOSSARY OF TERMS USED IN THIS REPORT

Clear Group — Includes score for those students who had both a Fall and Spring test score in a given subject.

Deviation — Numerical value (usually between -3 and +3) that expresses the number of units a group or school mean is from the mid-point or District mean of 0 on a normal curve.

Standard Distribution of School Means



ECEC — Early Childhood Education Center are schools in the Portland Public School District that offer pre-kindergarten through fifth grade programs. As part of "Schools for the Seventies," the previous Model Schools of the 1960s were converted to ECECs. The ECECs incorporate various enrichment programs and are often magnet schools. All Albina elementary schools with one exception were converted to to ECECs during the 1970s.

Gain — School or group deviations from the District mean for two different points in time are subtracted to determine the difference. Subtracting the second deviation from the first will yield gain. Gains are expressed in terms of normal curve deviation units with a mean of 0 and a range of approximately -3 to +3.

Intact Group — Includes score for those students who remained in the same school during the 1982-83 school year.

Resident — Student who **lives within the boundaries of the ECECs** and attended pre-kindergarten and kindergarten at an ECEC.

Transfer — Student who **lives outside the boundaries of the ECECs** and attended pre-kindergarten and kindergarten at an ECEC.